

ABSTRACT OF THE DISCLOSURE

An apparatus which can control thickness uniformity during deposition of conductive material from an electrolyte onto a surface of a semiconductor substrate is provided. The apparatus has an anode which can be contacted by the electrolyte during deposition of the conductive material, a cathode assembly including a carrier adapted to carry the substrate for movement during deposition, and a conductive element permitting electrolyte flow therethrough. A mask lies over the conductive element and has openings permitting electrolyte flow. The openings define active regions of the conductive element by which a rate of conductive material deposition onto the surface can be varied. A power source can provide a potential between the anode and the cathode assembly so as to produce the deposition. A deposition process is also disclosed, and uniform electroetching of conductive material on the semiconductor substrate surface can additionally be performed.